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Flehr Hohbach Test Albritton & Herbert LLP
Four Embarcadero Center
Suite 3400
San Francisco, CA 94111-4187

EXAMINER	
FORMAN, BETTY J	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/500,555	STUELPNAGEL ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2003 & 22 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-6,9-17,19-23,26,27 and 28-67* is/are pending in the application.

4a) Of the above claim(s) *13-17 and 28-43* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-6,9-12,19-23,26,27 and 44-67* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL ACTION

Status of the Claims

1. This action is in response to papers filed 22 September 2003 and supplemental response filed 22 December 2003. Claims 2-6, 9-12, 19-23, 26-27 and 44-51 have been amended, claims 1, 7-8, 18 and 24-25 have been canceled and claims 55-67 have been added.

All of the amendments have been thoroughly reviewed and entered. The previous rejections in the Office Action dated 15 April 2003, not reiterated below, are withdrawn in view of the amendments. All of the arguments have been thoroughly reviewed but are deemed moot in view of the amendments, withdrawn rejections and new grounds for rejection. New grounds for rejection necessitated by amendment are discussed.

Claims 13-17, 28-43 are withdrawn from prosecution.

Claims 2-6, 9-12, 19-23, 26-27 and 44-67 are under prosecution.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2-6, 9-10, 19-23, 266-27, 44-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walt et al. (U.S. Patent No. 6,327,410 B1, filed 11 September 1998) in view of Modlin (U.S. Patent No. 6,258,326, filed 18 September 1998).

Claims 2-6, 9-10, 44-45, 52-59 drawn to an array composition

Regarding Claims 52, 55 and 57, Walt et al. teach an array composition comprising: a substrate with a surface comprising: discrete sites; a population of microspheres comprising at least a first and a second subpopulation wherein each subpopulation comprises a bioactive agent, wherein said microspheres are distributed on said surface (Column 3, lines 35-45) and wherein the array comprises at least one fiducial i.e. marker bead (Column 19, lines 2-5). Walt et al are silent regarding any specific position of the fiducial.

However, fiducials permanently incorporated into the substrate (Claim 52); on the periphery of the substrate (Claim 55); and at defined locations (Claim 57) were well known in the art at the time the claimed invention was made as taught by Modlin (Fig. 2-5). Furthermore, Modlin teaches that the incorporation and positioning of the fiducials facilitates alignment of the substrate and detection system thereby facilitating sample handling and analysis (Abstract; Column 2, line 48-Column 3, line 11; and Column 6, lines 25-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the fiducial positioning of Modlin to the fiducials of Walt et al. One of ordinary skill would have been motivated to position the fiducials permanently in the substrate (Claim 52); on the periphery of the substrate (Claim 55); and/or at defined locations (Claim 57) as illustrated by Modlin (Fig. 2-5) for the expected benefit of facilitating sample handling and analysis as taught by Modlin (Abstract).

Regarding Claim 2, Walt et al. teach the array wherein each subpopulation comprises a unique optical signature (Column 3, lines 40-42).

Regarding Claim 3, Walt et al. teach the array wherein each subpopulation comprises an identifier binding ligand that will bind a decoder binding ligand such that the identification of the bioactive agent can be elucidated (Column 7, line 55-Column 8, lines 19).

Regarding Claim 4, Walt et al. teach the array wherein said substrate is a fiber optic bundle (Column 5, lines 24-31) and the fiducial is a fiducial fiber i.e. fiber having a different diameter (Column 19, lines 13-15).

Regarding Claim 5, Walt et al. teach the array wherein said substrate is a fiber optic bundle (Column 5, lines 24-31) and said array comprises at least three non-linear fiducials each of which is a fiducial fiber i.e. the fiducial fibers of differing size denote subarrays and the array of Walt et al comprises at least three sub-arrays (Column 18, line 65-Column 19, line 2 and lines 13-15).

Regarding Claim 6, Walt et al. teach the array wherein said fiducial has a different shape i.e. fiber having a different diameter (Column 19, lines 13-15).

Regarding Claim 9, Walt et al. teach the array wherein said bioactive agents are nucleic acids (Column 9, lines 41-43).

Regarding Claim 10, Walt et al. teach the array wherein said bioactive agents are proteins (Column 8, lines 35-38).

Regarding Claim 44, Walt et al teach the array wherein said discrete sites are wells (Column 17, lines 38-46).

Regarding Claim 45, Walt et al teach the array wherein the microspheres are randomly distributed on said substrate (Column 17, lines 47-53).

Regarding Claim 50, Walt et al teach the array wherein the identifier binding ligand is a protein (Column 8, lines 35-38).

Regarding Claim 51, Walt et al teach the array wherein the identifier binding ligand is a nucleic acid (Column 9, lines 41-45).

Regarding Claim 53, Modlin teaches the array wherein the fiducial is on the periphery of the array (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 54, Modlin teaches the array wherein the fiducial at a defined location on the array (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 56, Modlin teaches the array wherein the fiducial at a defined location on the array (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 58, Modlin teaches the array wherein the fiducial is permanently incorporated into the substrate (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 59, Walt et al teach the array wherein the substrate is a fiber optic bundle (Abstract).

Claims 19-23, 46-49, 50-67 drawn to a method of making an array composition

Regarding Claims 60, 63, and 65, Walt et al. teach a method of making an array composition comprising: forming a substrate with a surface comprising individual sites; and distributing microspheres on said surface such that said individual sites contain microspheres (Column 17, lines 11-53) wherein said microspheres comprise at least a first and a second subpopulation each comprising a bioactive agent (Column 3, lines 35-45) and incorporating at least one fiducial (Column 19, lines 2-5). Walt et al are silent regarding specific positioning of the fiducial.

However, positioning fiducials permanently into the substrate (Claim 60); on the periphery of the substrate (Claim 63); and at defined locations (Claim 65) were well known in the art at the time the claimed invention was made as taught by Modlin (Fig. 2-5). Furthermore, Modlin teaches that the incorporation and positioning of the fiducials facilitates alignment of the substrate and detection system thereby facilitating sample handling and

analysis (Abstract; Column 2, line 48-Column 3, line 11; and Column 6, lines 25-36). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the fiducial positioning of Modlin to the fiducials of Walt et al. One of ordinary skill would have been motivated to position the fiducials permanently in the substrate (Claim 60); on the periphery of the substrate (Claim 63); and/or at defined locations (Claim 65) as illustrated by Modlin (Fig. 2-5) for the expected benefit of facilitating sample handling and analysis as taught by Modlin (Abstract).

Regarding Claim 19, Walt et al. teach the method wherein each subpopulation comprises an identifier binding ligand that will bind a decoder binding ligand such that the identification of the bioactive agent can be elucidated (Column 7, line 55-Column 8, lines 19).

Regarding Claim 20, Walt et al. teach the method wherein each subpopulation comprises a unique optical signature for identification and elucidation of the bioactive agent (Column 13, lines 8-24).

Regarding Claim 21, Walt et al. teach the method wherein said substrate is a fiber optic bundle (Column 5, lines 24-31) and the fiducial is a fiducial fiber i.e. fiber having a different diameter (Column 19, lines 13-15).

Regarding Claim 22, Walt et al. teach the method wherein said substrate is a fiber optic bundle (Column 5, lines 24-31) and said array comprises at least three non-linear fiducials each of which is a fiducial fiber i.e. the fiducial fibers of differing size denote subarrays and the array of Walt et al comprises at least three sub-arrays (Column 18, line 65-Column 19, line 2 and lines 13-15).

Regarding Claim 23, Walt et al. teach the method wherein said fiducial has a different shape i.e. fiber having a different diameter (Column 19, lines 13-15).

Regarding Claim 25, Walt et al. teach the method wherein the fiducial is a fiducial bead i.e. marker bead (Column 19, lines 2-5).

Regarding Claim 26, Walt et al. teach the method wherein said bioactive agents are nucleic acids (Column 9, lines 41-43).

Regarding Claim 27, Walt et al. teach the method wherein said bioactive agents are proteins (Column 8, lines 35-38).

Regarding Claim 46, Walt et al teach the method of Claim 18 wherein said discrete sites are wells (Column 17, lines 38-46).

Regarding Claim 47, Walt et al teach the method of Claim 18 wherein the microspheres are randomly distributed on said substrate (Column 17, lines 47-53).

Regarding Claim 48, Walt et al teach the method of Claim 19 wherein the identifier binding ligand is a protein (Column 8, lines 35-38).

Regarding Claim 49, Walt et al teach the method of Claim 19 wherein the identifier binding ligand is a nucleic acid (Column 9, lines 41-45).

Regarding Claim 61, Modlin teaches the method wherein the fiducial is on the periphery of the array (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 62, Modlin teaches the method wherein the fiducial at a defined location on the array (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 64, Modlin teaches the method wherein the fiducial at a defined location on the array (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 66, Modlin teaches the method wherein the fiducial is permanently incorporated into the substrate (Column 6, lines 25-36; Fig. 2, #56; Fig. 3 #56; and Fig. 5, #90).

Regarding Claim 67, Walt et al teach the method wherein the substrate is a fiber optic bundle (Abstract).

4. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walt et al. (U.S. Patent No. 6,327,410 B1, filed 11 September 1998) in view of Modlin (U.S. Patent No. 6,258,326, filed 18 September 1998) as applied to Claims 52, 55 and 57 above and further in view of Chee et al. (U.S. Patent No. 5,795,716, issued 18 August 1998).

Regarding Claims 11-12, Walt et al. teach an array composition comprising: a substrate with a surface comprising: discrete sites; a population of microspheres comprising at least a first and a second subpopulation wherein each subpopulation comprises a bioactive agent, wherein said microspheres are distributed on said surface (Column 3, lines 35-45) and wherein the array comprises at least one fiducial i.e. marker bead (Column 19, lines 2-5). Walt et al are silent regarding any specific position of the fiducial. And Modlin teach positioning fiducials permanently into the substrate; on the periphery of the substrate; and/or at defined locations (Fig. 2-5) whereby positioning of the fiducials facilitates alignment of the substrate and detection system thereby facilitating sample handling and analysis (Abstract; Column 2, line 48-Column 3, line 11; and Column 6, lines 25-36).

Additionally Walt et al teach the array is analyzed using a computer and computer software which strongly suggests that a computer code receives and registers data images (Column 16, lines 10-20 and 45-49) but they do not specifically teach a computer code receives and registers as first data image. Chee et al. teach an array composition comprising a substrate with a surface comprising discrete sites and a population of bioactive agents (Column 3, lines 34-47) and further comprising computerized analysis using a computer readable memory comprising: a computer code that receives a first data image; and a computer code that registers said first data image (Claim 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the composition of Walt et al. with the computer readable memory of Chee et al. and to use the fiducial to position-specifically receive and register a first data image via the computer code for the expected

benefit of computer aided improved analysis of bioagents as taught by Chee et al. (Column 1, lines 55-67).

Regarding Claim 12, Chee et al. teach the computer readable memory further comprises a computer code that receives a second data image; a computer code that registers said second data image; and a computer code that compares said first and second data image (Claim 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to further modify the array composition of Walt et al. with the computer readable memory further comprising a computer code that receives and registers a second data image and compares the first and second data images for the expected benefit of allowing image analysis and statistical analysis of multiple data files simultaneously as taught by Chee et al. (Column 22, lines 23-32).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 2-6, 9-12, 44-45, 52-59 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 37-40, 44-45 of copending Application No. 09/189,543 in view of Walt et al (U.S. Patent No. 6,327,410, filed

11 September 1998). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to an array composition comprising a substrate comprising discrete sites and a population of microspheres randomly distributed on the sites and differ only in the instant composition further includes a fiducial. However, array composition comprising fiducials were well known in the art at the time the claimed invention was made as taught by Walt et al who teach that fiducials are important for spatially differentiating between subpopulations (Walt et al, Column 19, lines 2-5). As such, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the '543 composition by adding at least one fiducial to thereby differentiate between microsphere subpopulations based on the importance of differentiation as taught by Walt et al (Column 19, lines 2-5). The claim set further differ in that the '543 composition is drawn to a density of discrete sites being at least 100 sites per mm^2. However, the density recited in the '543 composition is the preferred density of the instant invention as taught at page 8, lines 7-12 of the instant specification. The instant claims are broadly drawn to a substrate comprising discrete sites and the specification further defines the substrate by teaching a preferred discrete site density of at least 100 sites per mm^2. As such, the instant claims encompass the density recited in the '543 composition. Because the instant claims encompass the density recited in the '543 composition and because Walt et al provide a motivation to modify the '543 composition by adding at least one fiducial, the instantly claimed composition is not patentably distinct from that claimed in the '543 application.

7.. This is a provisional obviousness-type double patenting rejection.

Response to Comments

8. Applicant's intention to file a Terminal Disclaimer, if necessary upon indication of allowable subject matter is acknowledged. The rejection is maintained.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741 until 13 January 2004. The examiner can normally be reached on 6:00 TO 3:30 Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (703) 308-1119. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-0507.

BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
March 2, 2004